

AFPC Rock Check Program

Sample No. 2008-10

	Method #	# of Anal.	Grand Median	Std Dev
Moisture				
Ground Sample AFPC 9-2	101	17	1.35	0.235
Other (describe)	102	9	1.28	0.235
Method Group 100		26	1.33	0.24
BPL or P₂O₅				
Gravimetric AFPC 9-5	201	3	33.15	0.082
ICP-induced coupled plasma	202	5	32.88	0.075
Photometric-AFPC 9-6	203	13	32.85	0.164
Automated -AOAC 978.01-15th	204	11	32.89	0.131
Other(describe)	205	5	32.85	0.101
Method Group 200		37	32.88	0.12
BPL or P₂O₅ (on Dry Basis)				
Gravimetric AFPC 9-5	211	2	33.52	0.075
ICP-induced coupled plasma	212	2	33.40	0.035
Photometric-AFPC 9-6	213	8	33.34	0.116
Automated -AOAC 978.01-15th	214	11	33.37	0.101
Other(describe)	215	3	33.13	0.218
Method Group 210		26	33.37	0.14
Fe₂O₃				
Atomic Absorption-AFPC 9-12,13	301	6	0.94	0.123
ICP-induced coupled plasma	302	26	0.97	0.029
Other(describe)	303	1	0.93	0.000
Method Group 300		33	0.97	0.04
Al₂O₃				
Atomic Absorption-AFPC 9-16,17	401	5	1.26	0.179
ICP-induced coupled plasma	402	25	1.41	0.086
Other(describe)	403	1	1.66	0.000
Method Group 400		31	1.41	0.07
MgO				
Atomic Absorption-AFPC 9-18,19	501	5	0.38	0.019
ICP-induced coupled plasma	502	25	0.39	0.022
Other(describe)	503	1	0.45	0.000
Method Group 500		31	0.39	0.02
Acid Insoluble				
Insoluble-AFPC 9-8	601	19	3.07	0.136
Other(describe)	602	1	4.86	0.000
Method Group 600		20	3.07	0.16
CaO				
Gravimetric sulfate	701	2	48.15	0.373
ICP-induced coupled plasma	702	12	47.63	0.299
Ceric Sulfate volumetric	703	1	48.10	0.000
Permanganate	704	5	47.34	0.157
EDTA Volumetric	705	4	47.98	0.523
Other(describe)	706	8	47.73	0.375
Method Group 700		32	47.66	0.49
CaO (on Dry Basis)				
Gravimetric sulfate	711	2	48.61	0.340
ICP-induced coupled plasma	712	5	48.32	0.082
Ceric Sulfate volumetric	713	1	48.60	0.000
Permanganate	714	2	48.11	0.545
EDTA Volumetric	715	3	48.32	0.406
Other(describe)	716	7	48.58	0.257
Method Group 710		26	48.33	0.40

	Method #	# of Anal.	Grand Median	Std Dev
Fluorine, F				
Volumetric-AFPC 9-37	801			
Specific Ion Electrode	802	18	3.80	0.164
Other (describe)	803	3	3.76	0.086
Method Group 800		21	3.79	0.13
Arsenic, As				
Atomic Absorption	911	1	2.0	0.00
ICP-induced coupled plasma	912	5	11.0	2.20
Other(describe)	913	3	6.0	0.81
Method Group 900		9	7.2	4.03
Cadmium, Cd				
Atomic Absorption	921	2	8	2.6
ICP-induced coupled plasma	922	9	5	0.6
Other(describe)	923	1	5	0.0
Method Group 910		12	5	0.6
Cobalt, Co				
Atomic Absorption	931	1	20	0.0
ICP-induced coupled plasma	932	10	4	1.1
Other(describe)	933	1	4	0.0
Method Group 920		12	4	1.0
Mercury, Hg				
Atomic Absorption	941			
ICP-induced coupled plasma	942			
Other(describe)	943	1	0.1	0.00
Method Group 930		1	0.1	0.00
Molybdenum, Mo				
Atomic Absorption	951			
ICP-induced coupled plasma	952	7	14	1.7
Other(describe)	953	2	14	2.6
Method Group 940		9	14	2.9
Nickel, Ni				
Atomic Absorption	961	2	37	22.9
ICP-induced coupled plasma	962	9	8	1.5
Other(describe)	963	2	28	13.0
Method Group 950		13	8	1.9
Lead, Pb				
Atomic Absorption	971	2	11	7.3
ICP-induced coupled plasma	972	6	22	6.6
Other(describe)	973	1	22	0.0
Method Group 960		9	21	6.9
Selenium, Se				
Atomic Absorption	981			
ICP-induced coupled plasma	982	1		0.0
Other(describe)	983	1	2	0.0
Method Group 970		2	1	0.8
Zinc, Zn				
Atomic Absorption	991	3	57	4
ICP-induced coupled plasma	992	12	57	8
Other(describe)	993	2	52	10
Method Group 980		17	57	7

101 Ground Sample AFPC 9-2			
Lab	%	H ₂ O	
27	1.82	-1.999	
Std Dev	1.59	-1.000	
13	1.55	-0.851	
13	1.44	-0.383	
10	1.43	-0.319	
10	1.41	-0.234	
16	1.41	-0.234	
51	1.40	-0.213	
16	1.35	0.000	
49	1.35	0.000	
Median	1.35	0.000	
24	1.33	0.106	
24	1.33	0.106	
35	1.19	0.681	
Std Dev	1.11	1.000	
6	1.09	1.106	
75	1.08	1.170	
75	1.04	1.340	
77	0.99	1.531	
77	0.72	2.680	

102 Other (describe)			
Lab	%	H ₂ O	
15	1.75	-1.978	
15	1.68	-1.702	
Std Dev	1.52	-1.000	
9	1.36	-0.319	
21	1.29	-0.043	
9	1.28	0.000	
Median	1.28	0.000	
21	1.13	0.638	
Std Dev	1.04	1.000	
55	1.04	1.021	
30	1.03	1.063	
55	0.84	1.872	

201 Gravimetric AFPC 9-5			
Lab	%	P2O5	
77	33.18	-0.365	
51	33.15	0.000	
Median	33.15	0.000	
Std Dev	33.07	1.000	

202 ICP-induced coupled plasma			
Lab	%	P2O5	
241	32.96	2.315	
10	32.98	-1.340	
Std Dev	32.95	-1.000	
6	32.93	-0.737	
10	32.88	0.000	
Median	32.88	0.000	
6	32.83	0.603	
Std Dev	32.80	1.000	
50	32.77	1.474	

203 Photometric-AFPC 9-6			
Lab	%	P2O5	
35	33.30	-2.741	
60	33.25	-2.436	
30	33.04	-1.157	
Std Dev	33.01	-1.000	
16	32.95	-0.609	
9	32.93	-0.487	
16	32.88	-0.183	
6	32.85	0.000	
Median	32.85	0.000	
9	32.80	0.335	
78	32.75	0.640	
6	32.73	0.731	
78	32.73	0.761	
Std Dev	32.69	1.000	
244	32.62	1.401	
27	32.33	3.167	

204 Automated -AOAC 978.01-15th			
Lab	%	P2O5	
24	33.18	-2.221	
75	33.08	-1.455	
75	33.08	-1.455	
Std Dev	33.02	-1.000	
24	32.92	-0.230	
13	32.89	0.000	
15	32.89	0.000	
Median	32.89	0.000	
15	32.87	0.191	
21	32.83	0.459	

13	32.82	0.536	
21	32.82	0.536	
77	32.78	0.842	

205 Other(describe)			
Lab	%	P2O5	
19	33.30	-4.467	
49	32.98	-1.290	
Std Dev	32.95	-1.000	
55	32.85	0.000	
Median	32.85	0.000	
51	32.85	0.050	
Std Dev	32.75	1.000	
55	32.51	3.424	

211 Gravimetric AFPC 9-5			
Lab	%	P2O5	dB
51	33.62	-1.340	
Std Dev	33.60	-1.000	
Median	33.52	0.000	
Std Dev	33.45	1.000	
77	33.42	1.340	

212 ICP-induced coupled plasma			
Lab	%	P2O5	dB
10	33.44	-1.340	
Std Dev	33.43	-1.000	
Median	33.40	0.000	
Std Dev	33.36	1.000	
10	33.35	1.340	

213 Photometric-AFPC 9-6			
Lab	%	P2O5	dB
35	33.70	-3.078	
Std Dev	33.46	-1.000	
16	33.42	-0.655	
30	33.38	-0.348	
9	33.36	-0.116	
Median	33.34	0.000	
16	33.33	0.116	
9	33.25	0.843	
Std Dev	33.23	1.000	
6	33.21	1.132	
27	32.93	3.565	

214 Automated -AOAC 978.01-15th			
Lab	%	P2O5	dB
24	33.63	-2.529	
15	33.47	-1.027	
Std Dev	33.47	-1.000	
75	33.44	-0.684	
15	33.43	-0.556	
75	33.43	-0.550	
13	33.37	0.000	
Median	33.37	0.000	
24	33.36	0.084	
13	33.34	0.335	
Std Dev	33.27	1.000	
21	33.26	1.106	
21	33.20	1.740	
77	33.11	2.606	

215 Other(describe)			
Lab	%	P2O5	dB
49	33.43	-1.389	
Std Dev	33.35	-1.000	
55	33.13	0.000	
Median	33.13	0.000	
Std Dev	32.91	1.000	
55	32.85	1.291	

301 Atomic Absorption-AFPC 9-12,13			
Lab	%	Fe2O3	
55	1.35	-3.330	
Std Dev	1.06	-1.000	
241	1.05	-0.893	
30	1.00	-0.487	
Median	0.94	0.000	
60	0.88	0.487	
51	0.87	0.568	
27	0.85	0.772	

302 ICP-induced coupled plasma			
Lab	%	Fe2O3	
77	1.09	-4.386	
77	1.07	-3.684	
55	1.01	-1.579	
Std Dev	0.99	-1.000	

78	0.99	-0.877
10	0.98	-0.526
10	0.98	-0.526
15	0.98	-0.526
16	0.98	-0.351
6	0.97	-0.175
13	0.97	-0.175
15	0.97	-0.175
51	0.97	-0.175
16	0.97	0.000
78	0.97	0.000
Median	0.97	0.000
9	0.96	0.175
13	0.96	0.175
49	0.96	0.175
75	0.95	0.362
75	0.94	0.799
35	0.94	0.877
Std Dev	0.94	1.000
9	0.94	1.053
50	0.90	2.358
24	0.88	3.158
24	0.88	3.158
21	0.87	3.333
21	0.82	5.087

303 Other(describe)		
Lab	%	Fe2O3
19	0.93	0.000
Median	0.93	0.000

401 Atomic Absorption-AFPC 9-16,17		
Lab	%	Al2O3
51	1.43	-0.949
30	1.39	-0.726
241	1.26	0.000
Median	1.26	0.000
55	1.15	0.614
Std Dev	1.08	1.000
27	0.78	2.680

402 ICP-induced coupled plasma		
Lab	%	Al2O3
78	1.79	-4.428

78	1.73	-3.670
77	1.64	-2.680
77	1.61	-2.330
51	1.54	-1.457
Std Dev	1.50	-1.000
24	1.50	-0.990
24	1.50	-0.990
6	1.43	-0.233
21	1.43	-0.233
16	1.43	-0.175
13	1.42	-0.117
10	1.41	0.000
13	1.41	0.000
Median	1.41	0.000
10	1.41	0.058
21	1.40	0.117
15	1.39	0.233
16	1.39	0.233
49	1.39	0.233
9	1.38	0.350
15	1.38	0.350
9	1.35	0.699
75	1.35	0.756
55	1.34	0.874
75	1.33	0.896
Std Dev	1.32	1.000
35	0.34	12.468

403 Other(describe)		
Lab	%	Al2O3
19	1.66	0.000
Median	1.66	0.000

501 Atomic Absorption-AFPC 9-18,19		
Lab	%	MgO
35	0.41	-1.876
Std Dev	0.39	-1.000
30	0.38	-0.268
55	0.38	0.000
Median	0.38	0.000
Std Dev	0.36	1.000
60	0.36	1.072
27	0.18	10.452

502 ICP-induced coupled plasma		
Lab	%	MgO
13	0.42	-1.340
Std Dev	0.41	-1.000
78	0.41	-0.893
78	0.40	-0.447
9	0.40	-0.223
10	0.40	-0.223
10	0.40	-0.223
15	0.40	-0.223
6	0.39	0.000
13	0.39	0.000
15	0.39	0.000
16	0.39	0.000
16	0.39	0.000
21	0.39	0.000
49	0.39	0.000
55	0.39	0.000
Median	0.39	0.000
9	0.39	0.223
51	0.38	0.447
50	0.38	0.451
Std Dev	0.37	1.000
24	0.37	1.117
24	0.37	1.117
21	0.36	1.340
77	0.36	1.340
77	0.35	1.787
75	0.33	2.472
75	0.30	3.912

503 Other(describe)		
Lab	%	MgO
19	0.45	0.000
Median	0.45	0.000

601 Insoluble-AFPC 9-8		
Lab	%	Al
55	4.35	-9.435
27	3.90	-6.131
51	3.21	-1.028
Std Dev	3.20	-1.000
16	3.18	-0.844
9	3.14	-0.551

16	3.09	-0.147
9	3.08	-0.110
15	3.08	-0.073
24	3.08	-0.073
10	3.07	0.000
Median	3.07	0.000
15	3.06	0.037
24	3.06	0.073
10	3.01	0.441
13	2.94	0.918
Std Dev	2.93	1.000
35	2.92	1.065
13	2.85	1.579
6	2.77	2.166
30	2.48	4.295
55	2.35	5.250

602 Other(describe)		
Lab	%	Al
19	4.86	0.000
Median	4.86	0.000

701 Gravimetric sulfate		
Lab	%	CaO
55	48.65	-1.340
Std Dev	48.52	-1.000
Median	48.15	0.000
Std Dev	47.78	1.000
55	47.65	1.340

702 ICP-induced coupled plasma		
Lab	%	CaO
75	49.37	-5.814
75	48.36	-2.425
Std Dev	47.93	-1.000
6	47.80	-0.568
49	47.80	-0.568
16	47.67	-0.117
16	47.66	-0.100
Median	47.63	0.000
77	47.60	0.100
10	47.53	0.334
10	47.47	0.551
Std Dev	47.33	1.000

77	47.20	1.436
78	46.80	2.772
78	46.62	3.373

703 Ceriic Sulfate volumetric		
Lab	%	CaO
30	48.10	0.000
Median	48.10	0.000

704 Permanganate		
Lab	%	CaO
51	48.16	-5.232
Std Dev	47.50	-1.000
21	47.41	-0.447
21	47.34	0.000
Median	47.34	0.000
60	47.20	0.893
Std Dev	47.18	1.000
27	46.52	5.232

705 EDTA Volumetric		
Lab	%	CaO
35	48.57	-1.137
Std Dev	48.50	-1.000
50	48.25	-0.525
Median	47.98	0.000
9	47.70	0.525
Std Dev	47.45	1.000
9	47.42	1.070

706 Other(describe)		
Lab	%	CaO
24	48.11	-1.007
Std Dev	48.10	-1.000
24	48.04	-0.820
15	47.81	-0.207
15	47.77	-0.100
Median	47.73	0.000
13	47.69	0.100
13	47.51	0.580
Std Dev	47.35	1.000
241	46.91	2.180
19	46.50	3.273

711 Gravimetric sulfate			
Lab	%	CaO	dB
55	49.06	-1.340	
Std Dev	48.95	-1.000	
Median	48.61	0.000	
Std Dev	48.27	1.000	
55	48.15	1.340	

712 ICP-induced coupled plasma			
Lab	%	CaO	dB
16	48.34	-0.267	
6	48.33	-0.116	
16	48.32	0.000	
Median	48.32	0.000	
Std Dev	48.24	1.000	
10	48.22	1.224	
10	48.14	2.149	

713 Ceriic Sulfate volumetric			
Lab	%	CaO	dB
30	48.60	0.000	
Median	48.60	0.000	

714 Permanganate			
Lab	%	CaO	dB
51	48.84	-1.340	
Std Dev	48.66	-1.000	
Median	48.11	0.000	
Std Dev	47.57	1.000	
27	47.38	1.340	

715 EDTA Volumetric			
Lab	%	CaO	dB
35	49.15	-2.059	
Std Dev	48.72	-1.000	
9	48.32	0.000	
Median	48.32	0.000	
9	48.07	0.621	

716 Other(describe)			
Lab	%	CaO	dB
24	48.75	-0.660	
24	48.68	-0.384	
15	48.65	-0.283	

15	48.58	0.000
Median	48.58	0.000
13	48.44	0.546
Std Dev	48.32	1.000
13	48.20	1.466
19	46.50	8.095

801 Volumetric-AFPC 9-37		
Lab	%	Fluorine, F
Median	0.00	0.000

802 Specific Ion Electrode		
Lab	%	Fluorine, F
55	36.10	#####
27	4.03	-1.401
24	4.01	-1.279
35	4.01	-1.279
24	3.97	-1.005
Std Dev	3.96	-1.000
49	3.89	-0.548
55	3.87	-0.396
21	3.83	-0.183
9	3.81	-0.061
Median	3.80	0.000
13	3.79	0.061
13	3.78	0.122
9	3.77	0.183
51	3.75	0.335
21	3.72	0.487
Std Dev	3.64	1.000
75	3.63	1.066
75	3.57	1.431
15	3.31	2.985
15	3.29	3.137

803 Other(describe)		
Lab	%	Fluorine, F
30	3.84	-0.932
77	3.76	0.000
Median	3.76	0.000
Std Dev	3.67	1.000
77	3.61	1.748

911 Atomic Absorption-AFPC 9-18,19		
Lab	ppm	Arsenic, As
27	2.0	0.000
Median	2.0	0.000

912 ICP-induced coupled plasma		
Lab	ppm	Arsenic, As
6	15.0	-1.817
Std Dev	13.2	-1.000
55	12.0	-0.432
78	11.0	0.000
Median	11.0	0.000
78	9.0	0.908
Std Dev	8.8	1.000
24	5.6	2.453

913 Other(describe)		
Lab	ppm	Arsenic, As
13	7.2	-1.451
Std Dev	6.8	-1.000
51	6.0	0.000
Median	6.0	0.000
Std Dev	5.2	1.000
77	5.0	1.229

921 Atomic Absorption-AFPC 9-12,13		
Lab	ppm	Cadmium, Cd
27	11	-1.340
Std Dev	10	-1.000
Median	8	0.000
Std Dev	5	1.000
51	4	1.340

922 ICP-induced coupled plasma		
Lab	ppm	Cadmium, Cd
77	6	-1.675
Std Dev	6	-1.000
51	5	0.000
75	5	0.000
75	5	0.000
77	5	0.000
Median	5	0.000
Std Dev	4	1.000
6	4	1.005

78	4	1.340
55	4	1.424
78	4	1.759

923 Other(describe)		
Lab ppm	Cadmium, Cd	
13	5	0.000
Median	5	0.000

931 Atomic Absorption-AFPC 9-16,17		
Lab ppm	Cobalt, Co	
27	20	0.000
Median	20	0.000

932 ICP-induced coupled plasma		
Lab ppm	Cobalt, Co	
78	6	-1.349
Std Dev	5	-1.000
51	5	-0.899
78	5	-0.899
6	5	-0.540
75	4	0.000
75	4	0.000
Median	4	0.000
55	4	0.270
50	3	0.618
77	3	0.899
77	3	0.899

933 Other(describe)		
Lab ppm	Cobalt, Co	
13	4	0.000
Median	4	0.000

941 Atomic Absorption-AFPC 9-18,19		
Lab ppm	Mercury, Hg	
Median	0.0	0.000

942 ICP-induced coupled plasma		
Lab ppm	Mercury, Hg	
Median	0.0	0.000

943 Other(describe)		
Lab ppm	Mercury, Hg	

13	0.1	0.000
Median	0.1	0.000

951 Atomic Absorption-AFPC 9-18,19		
Lab ppm	Iolybdenum, Mo	
Median	0	0.000

952 ICP-induced coupled plasma		
Lab ppm	Iolybdenum, Mo	
55	16	-1.308
6	16	-1.133
Std Dev	16	-1.000
78	14	-0.201
50	14	0.000
Median	14	0.000
78	14	0.207
Std Dev	12	1.000
77	12	1.139
77	11	1.722

953 Other(describe)		
Lab ppm	Iolybdenum, Mo	
13	17	-1.340
Std Dev	16	-1.000
Median	14	0.000
Std Dev	11	1.000
51	10	1.340

961 Atomic Absorption-AFPC 9-12,13		
Lab ppm	Nickel, Ni	
27	68	-1.340
Std Dev	60	-1.000
Median	37	0.000
Std Dev	14	1.000
51	7	1.340

962 ICP-induced coupled plasma		
Lab ppm	Nickel, Ni	
78	10	-1.039
Std Dev	9	-1.000
51	9	-0.704
78	9	-0.704
6	8	-0.033
55	8	0.000

Median	8	0.000
75	8	0.302
75	7	0.637
Std Dev	6	1.000
77	6	1.307
77	6	1.307

963 Other(describe)		
Lab ppm	Nickel, Ni	
19	45	-1.340
Std Dev	41	-1.000
Median	28	0.000
Std Dev	15	1.000
13	10	1.340

971 Atomic Absorption-AFPC 9-16,17		
Lab ppm	Lead, Pb	
51	21	-1.340
Std Dev	18	-1.000
Median	11	0.000
Std Dev	3	1.000
27	1	1.340

972 ICP-induced coupled plasma		
Lab ppm	Lead, Pb	
78	27	-0.665
6	25	-0.437
55	23	-0.171
Median	22	0.000
78	21	0.171
Std Dev	16	1.000
77	14	1.235
77	13	1.388

973 Other(describe)		
Lab ppm	Lead, Pb	
13	22	0.000
Median	22	0.000

981 Atomic Absorption-AFPC 9-18,19		
Lab ppm	Selenium, Se	
Median	0	0.000

982 ICP-induced coupled plasma		
Lab ppm	Selenium, Se	
55	0	0.000
Median	0	0.000

983 Other(describe)		
Lab ppm	Selenium, Se	
13	2	0.000
Median	2	0.000

991 Atomic Absorption-AFPC 9-18,19		
Lab ppm	Zinc, Zn	
27	62	-1.411
Std Dev	61	-1.000
60	57	0.000
Median	57	0.000
Std Dev	53	1.000
51	53	1.269

992 ICP-induced coupled plasma		
Lab ppm	Zinc, Zn	
24	73	-2.110
24	72	-2.043
75	68	-1.510
Std Dev	64	-1.000
50	60	-0.497
78	58	-0.110
55	57	-0.090
Median	57	0.000
6	56	0.090
75	56	0.090
78	53	0.557
51	52	0.690
Std Dev	49	1.000
77	37	2.623
77	35	2.890

993 Other(describe)		
Lab ppm	Zinc, Zn	
13	66	-1.340
Std Dev	62	-1.000
Median	52	0.000
Std Dev	42	1.000
19	39	1.340

